Diagnosis and Treatment of Peyronie Disease With Both Dorsal and Ventral Plaques Using Doppler Ultrasound

NYU Case of the Month, July 2019

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A 51-year-old man presented with a history of penile trauma during intercourse on the first night of his honeymoon. The patient stated that he missed the vaginal vault, which led to immediate pain and discomfort. He maintained his erection and denied hearing any popping or snapping sound. He was able to complete intercourse but noted mild swelling of the penis afterward that persisted for 5 days. He denied any ecchymosis or hematoma at that time, and he had no urinary complaints. Because morning erections were uncomfortable after the traumatic event, he refrained from any further sexual activity.

About 2 months after the incident, the patient was able to self-palpate a hard nodule in the mid-shaft of the penis. He consulted a urologist and was prescribed anti-inflammatories and pentoxifylline 3 times a day. Three months after the injury, he was achieving normal painless morning erections as well as having non-painful intercourse. However, he noted insidious development of a dorsal 45-degree curvature, with the point of maximal curvature at the mid-shaft.

Six months after the penile trauma, the patient returned to the urologist, who noted a stable 1.5-cm plaque at the mid-shaft of the penis. The patient underwent 3 interferon injections followed by continuous stretching and modeling exercises with the RestoreX traction device (PathRight Medical, Plymouth, MN), which resulted in mild improvement of the penile curvature. No re-measurement was recorded.

The patient sought a second opinion to improve his curved erection.

Evaluation at NYU Langone Health

The patient was able to achieve penetration without difficulty, but psychologically he was greatly bothered by the penile deformity. His wife was not bothered by the curvature during intercourse, but she was concerned that he was refraining from having frequent intercourse because of worry over further trauma to that area.

Focused genitourinary physical examination indicated a circumcised penis, a dorsal plaque about 2 cm in length and about 1 cm in width, and a ventral plaque 2 cm in length and 1 cm in width overlying the urethra.

Relevant past medical history included Dupuytren contracture.

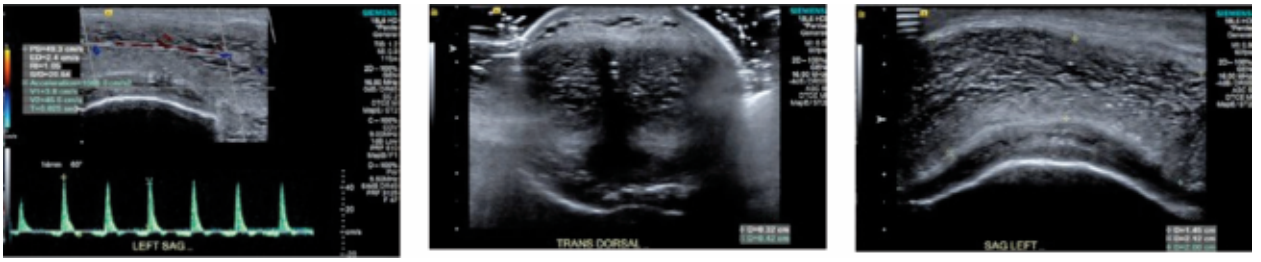

Figure 1. Results of the penile Doppler ultrasound.

Diagnostics

The patient underwent a penile Doppler examination. As shown in Figure 1, the examination indicated normal peak systolic velocity (PSV); normal end diastolic velocity (EDV); no evidence of arterial insufficiency; no evidence of venous leakage; normal reversal of flow (Figure 1A); a dorsal plaque 2 cm in length, 1.5 cm in width, with subsequent 45-degree dorsal and mild left lateral curvature (Figure 1B); and ventral plaque 2 cm in length and 1 cm in width overlying the urethra (Figure 1C).

Management

The patient was offered conservative management with XIAFLEX® (collagenase clostridium histolyticum) injection (Endo Pharmaceuticals Inc., Malvern, PA) only of the dorsal plaque versus penile plication or plaque excision and grafting of the dorsal plaque. He opted for 4 cycles of XIAFLEX (2 shots per cycle). The dorsal curvature improved from 45 degrees to 30 degrees, with complete resorption of the plaque. The patient is very satisfied with these results, which have been durable to 1-year follow-up.

Discussion

PD is an acquired alteration of the tunica albuginea of the penile corpora cavernosa that can result in formation of fibrous tunical plaques leading to curvature, shortening, and hourglass or hinge defects of the penis. Symptoms of PD can range from discomfort to pain in the penis that occurs during an erection. Pain is often felt at the point of maximal curvature but can be felt anywhere along the shaft. Pain is also experienced by the partner when the curvature becomes more severe. Sometimes the angle of the curvature can be so severe that it precludes penetrative intercourse.[1]

Although the etiology is unclear in many cases, PD plaques seem to result from impaired wound healing following a traumatic event to the penis. PD has also been associated with prior urological surgeries as well as comorbidities such as hypertension and diabetes. The prevalence ranges from 2% to 8.9% in the general male population but may be higher in high-risk subgroups such as men with diabetes.[2]

There are two distinct phases of PD. The acute or active phase is characterized by active inflammation, penile pain, and evolving deformity of the erect penis.[3] The pain usually resolves by 12 months, at which time most patients will have stabilization of the plaque (chronic or stable phase). Up to 13% of men describe spontaneous improvement of their curvature; however, 30% to 50% will have progressive deterioration leading to worsening of the size of the plaque and/or the curvature.[3]

Depression runs high in PD patients, with approximately 48% of men with PD suffering from depression (26% moderate, 22% severe) and 81% reporting emotional distress related to their PD.[4] These psychological effects are mostly due to changes in physical appearance and self-image induced by the deformity. The resultant effects include reduced frequency of sexual relationships, reduced libido and intimacy, and social and personal difficulties with relationships.[4]

The American Urological Association (AUA) guidelines on PD, published in 2015, state that clinicians may offer oral nonsteroidal anti-inflammatory medication for pain management. But when it comes to treatments, clinicians should not offer oral therapy with vitamin E, tamoxifen, or a combination of vitamin E and L-carnitine.[5] In addition, the guidelines state not to use extracorporeal shock wave therapy for the reduction of penile curvature or plaque size.[5]

The IMPRESS 1 and 2 studies excluded subjects with a ventral curvature deformity, an isolated hourglass deformity, or a calcified plaque.[6] Seemingly, the investigators of these trials excluded ventral defects because of the risk of harm to the urethra or surrounding structures. This creates a problem for a patient like ours, who had both a dorsal and a ventral plaque. In their article on injection therapy for PD, Brant and colleagues state that despite the company's warning, they have safely performed more than 1000 ventral plaque injections with XIAFLEX without complication.[7] At NYU Langone, we continue to

follow the safety guidelines outlined by Endo Pharmaceuticals as well as by the AUA and do not offer XIAFLEX in ventral plaques. Further studies of off-label use of XIAFLEX injected into ventral plaques are warranted.

Finally, we feel the use of ultrasound (US) in diagnosing and mapping plaques involved with PD is vital. US is the primary imaging modality of choice because of its easy availability, low risk, and ability to image and quantify the size of plaques.[8] In addition, US can identify smaller and nonpalpable lesions and show the extent of fibrosis. Exact measurement of plaque size provided by US makes it a perfect tool for following patients either under conservative treatment or after PD surgery. Finally, US is easy to perform, noninvasive, and easily repeatable. ■

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